Enhancing the Velocity of Convection of Aqueous Component of Supercritical Fluids Using Strategically Placed Phononic Energy

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Introduction

Building upon the publication of 15 June 2025, we continue to work to enhance heat conduction in supercritical fluids both by reducing the temperature of supercriticality, reducing other transition temperatures such as the evaporation point of the water through aeration and other methods and even by reducing the electrical charge of the electrons in the material without reducing the count of electrons so as to decrease transition temperatures.

This publication will prescribe a strategy for increasing the convective velocity of the predicted mono-molecular flow channels using strategically introduced phononic energy within boilers.

Abstract

The dynamic of supercriticality is underpinned by a high degree of entropy in the gaseous component of the steam being heated. This, as mentioned in 15 June 2025 (ibid.,) leads to the separation of the gaseous and the aqueous components of the steam. Once this transition occurs, it should be possible to introduce ultrasonic acoustic energy exclusively to the gaseous components in order to cause the gaseous components to retain less latent heat. The retention of latent heat is likely responsible for most of the remnant inefficiency in supercritical steam generators.

If latent heat were continually expelled through the introduction of focused acoustic energy which does not bisect the aqueous flow channels (as this would break the flow channels,) it would manifest itself in mutually increased pressure in neighboring gaseous zones. This increased pressure would impose further force against the aqueous components and cause their motion through the supercritical fluid to increase in velocity.

Depending upon the amount of latent heat which is being unwittingly trapped in the gaseous zones in a supercritical fluid, efficiency of heat conduction could be increased by anywhere from 25-30%, bringing total efficiency up to as high as 70%. In other to achieve this, it is necessary to have the capability to use a remote metrology capability to map the exact location of the aqueous flow channels which are difficult to detect at a mono-molecular width and which may be prone to shifting. Phononic energy would have to be highly focused and emitted through the boiler and steam pipe along a path which ensures it does not bisect with any of the flow channels. *If this is not possible, it might be achieve the desired result by emitting acoustic energy at a lower amplitude which does not disrupt the aqueous component's flow and causing these waves to converge within mapped gaseous zones so that they are converted into waves of higher amplitude which are nullified before they can do anything to disrupt flow channels but which persist for long enough for the*

gaseous component to release its latent heat, thereby providing additional propulsive force to the aqueous component.

Conclusion

Although there would be some trivial engineering challenges entailed in affixing a remote metrology system to the exterior of a boiler and steam pipe, there is no reason that such as system as well as an ultrasonic generator capable of introducing focused ultrasonic energy could not be affixed to the exterior of a boiler and steam pipe in order to determine how the introduction of phononic energy in such a strategic manner might enhance thermal conductivity in a supercritical fluid.